AMENDMENTS TO THE CLAIMS

1-12. (Canceled)

13. (New) A cubic logic having the shape of a normal geometric solid, substantially cubic, comprising:

N layers visible to the user of the toy per each direction of a three-dimensional, rectangular Cartesian coordinate system whose centre coincides with the geometric centre of the solid and whose axes pass through the centre of the solid's external surfaces and are vertical to the corresponding external surfaces, each axis of the three dimensional, rectangular Cartesian coordinate system is defined by two semi-axes extending in opposite directions from the geometric center of the solid,

said layers including a plurality of separate pieces , the sides of said pieces that form part of the solid's external surface being substantially planar,

said pieces being able to rotate in layers around the axes of said rectangular Cartesian coordinate system,

the surfaces of said pieces that are visible to the user of the toy being colored or bearing shapes or letters or numbers,

each of said pieces including three distinct parts, the distinct parts being:

- a first part that is outermost with regard to the geometric centre of the solid, the outer surfaces of said first part being either substantially planar, when they form part of the solid's external surface and are visible to the user or spherically cut, when they are not visible to the user,
- a second intermediate part, and
- a third part that is innermost with regard to the geometric centre of the solid, the third part forming part of a sphere or of a spherical shell, each of said pieces having recesses and/or protrusions, such that each piece is inter-coupled with and supported by one or more neighboring pieces, and one or two spherical recesses and/or protrusions between

adjacent layers are provided, the edges of each of said pieces being rounded,

the assembly of said pieces being held together to form said solid on a central three-dimensional supporting cross located at the centre of the solid, the cross having six cylindrical legs, the axes of symmetry of said legs coincide with the semi-axes of said three-dimensional, rectangular Cartesian coordinate system,

the assembly of said pieces being held on said central three-dimensional supporting cross by six caps, each of the caps being a central piece of a corresponding face of said solid, each of said caps having a cylindrical hole coaxial with the corresponding semi-axis of said three-dimensional, rectangular Cartesian coordinate system, each of said six caps being screwed to a corresponding leg of said central three-dimensional supporting cross via a supporting screw passing through said cylindrical hole, said caps either being visible to the user and having a flat plastic piece covering said cylindrical hole or being non-visible to the user,

the internal surfaces of each of said pieces not forming the external surfaces of said solid being formed by a combination of:

- planar surfaces,
- concentric spherical surfaces whose centre coincides with the geometric centre of the solid, and
- cylindrical surfaces, the cylindrical surfaces being provided on only the third innermost part of the six caps,

wherein for the configuration of the internal surfaces of each of said pieces, apart from said planar surfaces, said concentric spherical surfaces and said cylindrical surfaces, a minimum number of k right conical surfaces per semi-axis of said three-dimensional, rectangular Cartesian coordinate system are used,

the axis of said right conical surfaces coinciding with the corresponding semi-axis of said three-dimensional, rectangular Cartesian coordinate system,

the generating angle $\varphi 1$of the first and innermost of said right conical surfaces either being greater than 54.73561032° when the apex of said first conical surface coincides with the geometric centre of the solid, or starting from a value less than 54.73561032°, when the apex of

said first conical surface coincides with the geometrical centre of the solid and lies on the semi-axis opposite to the semi-axis which points to the direction in which said first conical surface widens,

the generating angle of the subsequent conical surfaces gradually increasing,

the number of layers N correlate with the number of right conical surfaces κ, so that:

- either N=2κ and said solid has an even number of N layers visible to the user per direction, plus one additional layer in each direction, the intermediate layer not being visible to the user,
- or N=2κ+1 and said solid has an odd number of N layers per direction that are all visible to the user, and

the second intermediate part of each of said pieces having thereby a conical sphenoid shape pointing substantially towards the geometric centre of the solid, the cross-section, when the second intermediate part is sectioned by spherical surfaces concentric with the geometric centre of the solid, having the shape of any triangle or trapezium or quadrilateral on a sphere, said cross-section being either similar or differentiated in shape along the length of said second intermediate part.

14. (New) The cubic logic toy according to claim 13, wherein, for values of N between 2 and 5, the external surfaces of said solid are planar.

15. (New) The cubic logic toy according to claim 13, wherein, for values of N between 7 and 11, the external surfaces of said solid are substantially planar.

16. (New) The cubic logic toy according to claim 13, wherein, when N=6, the external surfaces of the geometric solid are planar.

17. (New) The cubic logic toy according to claim 13, wherein, when N=6, the external surfaces of said solid are substantially planar.

18. (New) The cubic logic toy according to claim 13, wherein, when the number of right conical surfaces $\kappa = 1, 2, 3, 4$ or 5 and the number of layers N per each direction of said three-dimensional, rectangular Cartesian coordinate system which are visible to the user of the toy is $N=2\kappa$, the total number of the pieces that are able to rotate in layers around the axes of said three-dimensional, rectangular Cartesian coordinate system, with the addition of the central three-dimensional supporting cross, being equal to: $T = 6(2\kappa)^2+3$

19. (New) The cubic logic toy according to claim 13, wherein, when the number of right cortical surfaces $k = 1, 2, 3, 4$ or 5 and the number of layers N per each direction of said three-dimensional, rectangular Cartesian coordinate system which are visible to the user of the toy is $N=2\kappa +1$, the total number of the pieces that are able to rotate in layers around the axes of said three-dimensional, rectangular Cartesian coordinate system, with the addition of the central three-dimensional supporting cross, being equal to: $T=6(2\kappa)^2+3$

20. (New) The cubic logic toy according to claim 14, wherein each of the supporting screws is surrounded by a spring.

21. (New) The cubic logic toy according to claim 15, wherein each of the supporting screws is surrounded by a spring.

22. (New) The cubic logic toy according to claim 16, wherein each of the supporting screws is surrounded by a spring.

23. (New) The cubic logic toy according to claim 17, wherein each of the supporting screws is surrounded by a spring.